

WHAT IS CLAIMED IS:

1. A transmission system performing optical transmission comprising:

5 a repeater on a sending side including an optical amplifier amplifying an optical main signal, and a fault occurrence recognizing part detecting a pump light used for an opposing device via an optical fiber transmission line to which an optical main signal is sent by the repeater and  
10 recognizes occurrence of a fault if the fault occurrence recognizing part fails to receive the pump light; and

another repeater on a receiving side sending the pump light.

15 2. The transmission system according to claim 1, wherein the pump light is a Raman pump light sent by a Raman amplifier.

3. The transmission system according to claim 1,  
20 further comprising a light cutoff control part that stops the optical amplifying part outputting an amplified signal so that the light cutoff control in only one of two directions is performed when a fault occurs.

25 4. A repeater performing an optical relay transmission comprising:

an optical amplifier amplifying an optical main signal

by using a pump light; and

a fault occurrence recognizing part that receives the pump light used in an opposing device via an optical fiber transmission line to which an optical main signal is sent by the repeater and recognizes occurrence of a fault if the fault occurrence recognizing part fails to receive the pump light.

5. The repeater according to claim 4, further comprising a light cutoff control part that stops the optical amplifying part outputting an amplified signal so that the light cutoff control in only one of two directions is performed when a fault occurs.

6. The repeater according to claim 4, wherein the pump light is a Raman pump light sent by a Raman amplifier.